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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,032	02/04/2004	Wade C. Patterson	321904.1011	3895
24504	7590	07/14/2004	EXAMINER	
THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP 100 GALLERIA PARKWAY, NW STE 1750 ATLANTA, GA 30339-5948			CABRERA, ZOILA E	
			ART UNIT	PAPER NUMBER
			2125	

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/772,032

Applicant(s)

PATTERSON ET AL.

Examiner

Zoila E. Cabrera

Art Unit

2125

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-16, 18-26 and 28 is/are rejected.
7) ☐ Claim(s) 17 and 27 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 04 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 02/04/2004.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by **Demaline (US 5,968,393)**.

Regarding claim 1, **Demaline** discloses a system for controlling a temperature of a liquid residing within a tank, comprising:

- a temperature sensor configured to detect the temperature of the liquid (Col. 4, lines 15-17);
a temperature control element configured to alter the temperature of the liquid (Fig. 6, element 18; Col. 6, lines 21-28, lines 42-44 and lines 47-49);
a clock (Fig. 6, element 32); and
logic configured to automatically select a temperature threshold based on a time value indicated by the clock (Fig. 3; Col. 6, lines 47-49) and to perform a comparison between the selected temperature threshold and the temperature detected by the temperature sensor (Col. 2, lines 51-56, i.e., The controller strives to maintain the **temperature measured** at a control point at a certain **set temperature**), the logic further configured to control the temperature control element based on the comparison (Col. 2, lines 54-56).

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As for claims 2-3,

- the temperature control element comprises a heating element (Fig. 6, elements 14, 16; Col. 6, line 25 and lines 27-28);
- the temperature control element comprises a cooling element (Col. 5, lines 42-45, i.e., the set-point temperature for the upper portion of the tank is reduced to 50 degrees C).

As for claim 5,

- the logic is configured to select said temperature threshold based on a plurality of temperatures detected by a plurality of temperature sensors (Col. 6, lines 22-28; Fig. 6, modules 10, 12).

As for claim 8,

- the logic is configured to determine a value indicative of an amount of the liquid drawn from the tank during a particular time period, the logic further configured to select the temperature threshold based on the value (Col. 6, lines 8-11, i.e., no water usage corresponds to zero amount drawn from the tank, and in the absence of water usage the controller maintain temperatures within the tank within a range).

As for claim 10,

- the logic is configured to determine the value based on the temperature detected by the temperature sensor (Col. 5, lines 63-67, i.e., temperature drops when high water usage).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-7, 9, 11-15, 18-25 and 28, are rejected under 35 U.S.C. 103(a) as being unpatentable over **Demaline (US 5,968,393)** in view of **Day et al. (US 6,375,087)**.

Demaline discloses the limitations of claims 1 and 8 above. **Demaline** further discloses:

As for claim 11,

- a tank; a temperature sensor configured to detect a temperature of a liquid residing within the tank (Fig. 7);
a temperature control element coupled to the tank (Fig. 6, element 18; Col. 6, lines 21-28).

Regarding claim 22,

- A system, comprising:
a tank; a temperature sensor coupled to the tank (Fig. 7);
a temperature control element for controlling a temperature of a liquid residing within the tank (Fig. 6, element 18; Col. 6, lines 21-28); and
logic configured to determine a value indicative of an amount of the liquid drawn from the tank during a first time period (Col. 6, lines 8-11, i.e., no water usage corresponds to zero amount drawn from the tank, the controller will be able to

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achieve and maintain temperatures within the tank), the logic configured to perform a comparison between the temperature threshold and a temperature of the liquid detected by the temperature sensor during the second time period (Col. 2, lines 51-54, i.e., The controller strives to maintain the **temperature measured** at a control point at a certain **set temperature**), the logic further configured to control the temperature control element based on the comparison (Col. 2, lines 54-56).

Demaline does not disclose:

Regarding claim 11,

memory for storing data indicative of a usage history of the tank; and logic configured to automatically control the temperature control element based on the data.

With respect to claim 22,

establishing a temperature threshold for a second time period based on the value.

However, **Day** discloses such limitations as follows:

Regarding claim 11,

memory for storing data indicative of a usage history of the tank; and logic configured to automatically control the temperature control element based on the data (Figs. 11A - 12; Col. 6, lines 44-47; Col. 7, lines 45-48).

With respect to claim 22,

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- establishing a temperature threshold for a second time period based on the value (Col. 3, lines 28-35).

Therefore, it would have been obvious to a person of the ordinary skill in the art at the time the invention was made to combine the teachings of an automatic temperature control system of **Day** with the control system of **Demaline** because this will provide an effective mechanism for efficiently controlling hot water heaters and for automatically adjusting the heat based upon usage (**Day**, Col. 1, lines 35-40).

As for claims 12-15, **Demaline** teaches:

- the data is input via a user of the system (Fig. 7);
- the logic is configured to monitor a usage of the tank over time in order to define the data (Col. 5, lines 19-22, 34-40);
- the logic is configured to monitor the temperature control element in order to define the data (Col. 3, lines 64-67 + Col. 4, lines 1-5);
- the logic is configured to monitor the temperature sensor in order to define the data (Col. 2, lines 50-56).

As for claim 18,

- the logic is configured to define the data based on a plurality of temperatures sensed by a plurality of temperature sensors (Fig. 6, elements 60, 34; Col. 3, lines 62-64).

As for claim 21,

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- the temperature control element comprises a heating element (Fig. 6, elements 14, 16; Col. 6, line 25 and lines 27-28);

As for claim 24,

- the logic is further configured to determine the value based on a temperature detected by the temperature sensor (Col. 5, lines 63-67, i.e., temperature drops when high water usage).

Regarding claims 6-7, 9, 19-20, 23, 25 and 28, **Day** teaches:

As for claim 6,

- the logic is configured to automatically generate data indicative of a usage history of the tank, the logic further configured to automatically select the threshold based on the data (Col. 9, lines 10-14, i.e., history table; Col. 9, lines 24-30, i.e., 30 minutes before the idle time the thermostat is set to a value of normal temperature).

As for claim 7,

- the logic is configured to activate and deactivate the temperature control element based on the temperature threshold and another temperature threshold, thereby providing an activation hysteresis for the temperature control element, the logic further configured to change the activation hysteresis based on the data (Col. 3, lines 37-41);

Regarding claims 9 and 23,

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- the logic is configured to determine a total amount of time that the temperature control element is activated during the particular time period and to determine the value based on the total amount of time (Col. 3, lines 10-24).

As for claims 19-20,

- the logic is configured to control the temperature control element such that the temperature control element has an activation hysteresis, the logic configured to change the activation hysteresis based on the data (Col. 3, lines 37-41, i.e., the hibernation mode can be provided on a graduated scale based on the number of days);
- the logic is configured to decrease the hysteresis in response to a prediction that a high usage event associated with the tank is imminent (Col. 3, lines 27-33 and 37-41).

As for claim 25,

- the logic is further configured to change an activation hysteresis for the temperature control element based on the value (Col. 3, lines 37-41, i.e., hibernation mode).

As for claim 28,

- the value is based on temperatures detected by a plurality of temperatures sensors (Fig. 6, elements 60, 34; Col. 3, lines 62-64).

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Demaline (US 5,968,393) in view of Dosani et al. (US 5,808,277).

Regarding claim 4, **Demaline** discloses the limitations of claim 1 above but fail to disclose detecting a length of time that the temperature detected by the temperature sensor remains within a specified temperature range, the logic configured to control the temperature control element, in response to a determination that the length of time exceeds a threshold, such that the temperature control element causes the detected temperature to increase above a threshold for a sufficient amount of time to ensure that bacteria within the tank is substantially killed.

However, **Dosani** discloses detecting a length of time that the temperature detected by the temperature sensor remains within a specified temperature range (Col. 6, lines 51-58, i.e., consumption cycles and sanitizing cycles can be programmed into the thermostat which can be in minutes, hours or any other time unit. See also Col. 3, lines 21-28; Col. 6, lines 8-11), the logic configured to control the temperature control element, in response to a determination that the length of time exceeds a threshold (Col. 6, lines 51-58, please note that after a given time of each cycle the controller will switch from consumption to sanitizing cycle). **Dosani** further discloses a domestic electric heater that is able to regulate bacterial growth, by periodically elevating the temperature of water throughout the water tank beyond the preset consumption temperature to a sanitizing temperature, to destroy bacteria (Col. 1, lines 26-31; Abstract; Col. 2, lines 22-29; Col. 5, lines 5-9, i.e., please note that during sanitizing cycle the temperature is increased up to 70 degrees for a predetermined cycle or period of time).

Therefore, it would have been obvious to a person of the ordinary skill in the art at the time the invention was made to combine the teachings of **Demaline** temperature sensors with **Dosani's** electric heater which regulates bacterial growth, since this will improve **Demaline's** device to regulate bacterial growth in a water heater by elevating the temperature of the tank to destroy bacteria (**Dosani**, Col. 1, lines 26-31).

4. Claims 16 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Demaline** and **Day** as applied to claims 11 and 22 above and further in view of **Dosani et al. (US 5,808,277)**.

Regarding claims 16 and 26, **Demaline** and **Day** discloses the limitations of claims 11 and 22 above but fail to disclose the logic is configured to ensure that the temperature control element is periodically controlled such that an amount of bacteria within the tank remains within a desired range. However, **Dosani** discloses a domestic electric heater that is able to regulate bacterial growth, by periodically elevating the temperature of water throughout the water tank beyond the preset consumption temperature to a sanitizing temperature, to destroy bacteria (Col. 1, lines 26-31; Abstract; Col. 2, lines 22-29). Therefore, it would have been obvious to a person of the ordinary skill in the art at the time the invention was made to incorporate the teachings of **Demaline** and **Day** temperature sensors with **Dosani's** electric heater which regulates bacterial growth, since this will improve **Demaline's** device to regulate

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bacterial growth in a water heater by elevating the temperature of the tank to destroy bacteria (**Dosani**, Col. 1, lines 26-31).

Allowable Subject Matter

5. Claims 17 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior arts of record **Demaline, Day** and **Dosani et al.** do not disclose or suggest, alone or in combination, the step of:

As for claim 17, **the logic is configured to control the second temperature control element and to perform a verification that the second temperature control element is actually activated when the logic attempts to activate the second temperature control element, and wherein the logic is configured to automatically define the usage history based on the verification**, in combination with the other elements and features of the claimed invention.

Regarding claim 27, **the logic is configured to control the second temperature control element and to perform a verification that the second temperature control element is actually activated when the logic attempts to activate the second temperature control element, and wherein value is based on the verification**, in combination with the other elements and features of the claimed invention.

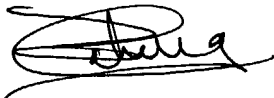
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Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning communication or earlier communication from the examiner should be directed to Zoila Cabrera, whose telephone number is (703) 306-4768. The examiner can normally be reached on M-F from 8:00 a.m. to 5:30 p.m. EST (every other Friday).

If attempts to reach the examiner by phone fail, the examiner's supervisor, Leo Picard, can be reached on (703) 308-0538. Additionally, the fax phones for Art Unit 2125 are (703) 308-6306 or 308-6296. Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist at (703) 305-9600.



Zoila Cabrera
Patent Examiner
7/12/04